HACETTEPE UNIVERSITY
FACULTY OF ENGINEERING
ELECTRICAL AND ELECTRONICS ENGINEERING

REMOTE FIRE CONTROL SYSTEM

ALPEREN ÜNAL, MELİH AYAZ, MUSA ONUR ÇİL

SUPERVISOR

Dr. GÜRHAN BULU, Electrical and Electronics Engineering, Hacettepe University
Dr. BERK GÜRDİL, ÖZER GÖKÇE, ROKETSAN Inc.

Introduction

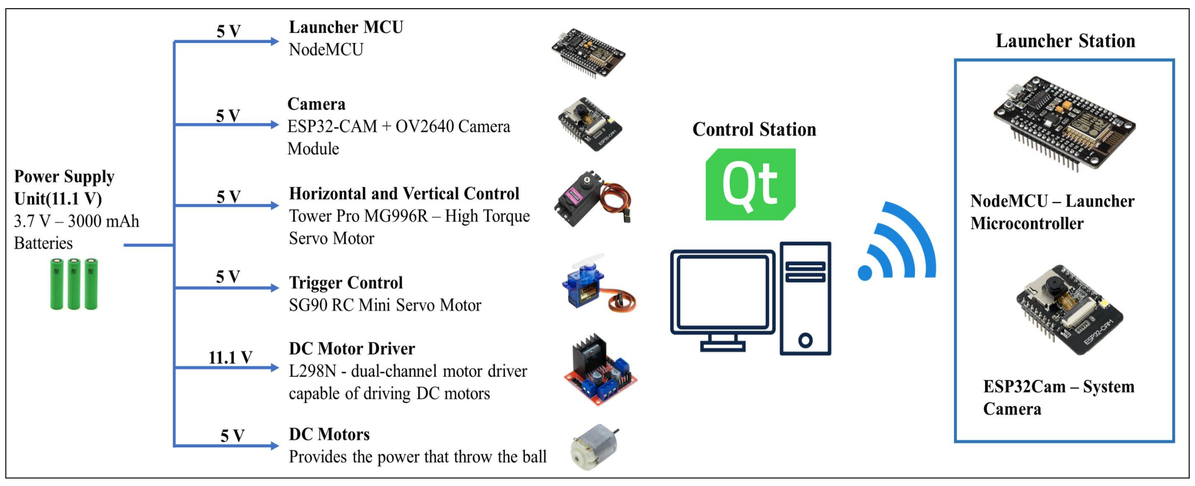
- This project is conducted in collaboration with ROKETSAN Inc.
- This project aims to construct a system of two parts connected wirelessly, namely launcher and control station, where launcher with a camera is able to launch an object in desired direction while control station controls the direction to be launched whilst a live camera video is being transmitted from former to latter.

Specifications and Design Requirements

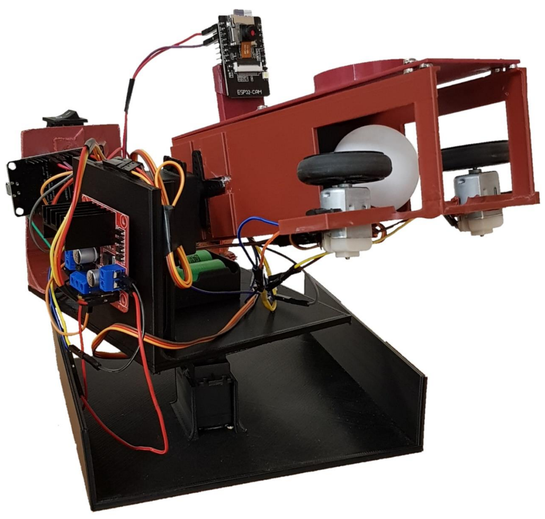
- The launcher station have a movement range of 360 degrees horizontally.
- The launcher station have a movement range of 80 degrees vertically between -20 degree and 60 degree.
- The launcher can throw the ball up to 5 m at the maximum power.
- The launcher capable of user controlled and variable launch power.
- Latency between camera, control inputs and user interface is less than 250 ms.

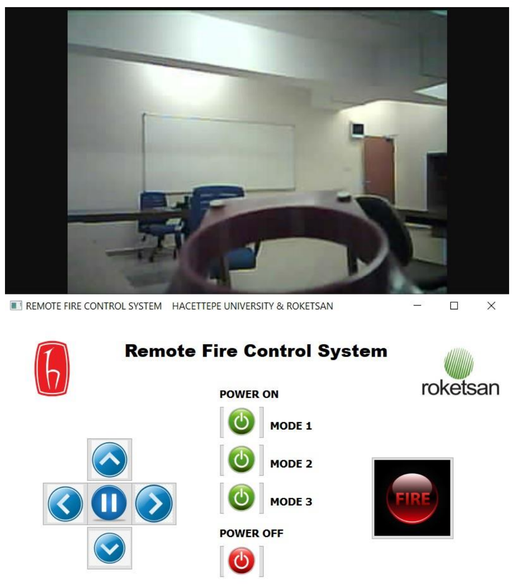
Solution Methodology

- Control Station GUI is programmed with C++ and QT.
- NodeMCU is used to control the electromechanical launcher system.
- ESP32 – Cam is used to transmit the live video.
- Servo motors are used to control the position of the system.
- DC motor driver and DC motors are used to throw the ball.
- Sony VTC6 battery is used to supply the required power to the system.



Launcher Station and GUI





Application Areas

- A remote-controlled firing system is a remotely operated weaponized system often equipped with fire control system for light and medium caliber weapons.

- Remote-controlled firing systems are primarily designed for use on naval platforms, armored military vehicles as well as for stationary use in order to serve for the defense of strategic assets according to tactical requirements.

Results and Discussion

- This project composed of 2 subsystems these 2 subsystems are connected to each other in a wireless way. Wireless connection of these two systems increase the mobility of the whole system.
- Usage of both NodeMCU and ESP32 – Cam provides us to communicate wirelessly with the user interface.
- In this project we aimed to create a product which can be used not only for military applications but also civilian applications. As an example usage for the civilian applications, a fire can be extinguished remotely by using our system.

Acknowledgements

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QR Code

- You can reach to our Youtube video with scanning the QR code.